IN THE CLAIMS:

1.   (Previously presented) A router controlling congestion on links attached to the router, said router comprising:

        a plurality of ports;

        a first port of said plurality of ports for receiving a data packet;

        a second port of said plurality of ports for transmitting said data packet;

        a receiver to receive an incoming loss report message on said second port;

        a first processor to determine loss of packets on selected ports of said plurality of ports;

        a second processor to calculate, in response to said incoming loss report message and said loss of packets, a loss rate statistic; and

        a transmitter to transmit an outgoing loss report message through said first port, said outgoing loss report message containing a field having said loss rate statistic written therein.

2.   (Cancelled)

3.   (Cancelled)

4.   (Previously presented) The router as in claim 1 wherein said loss rate statistic is a largest loss rate in a set of loss rates determined for said selected ports of said plurality of ports.

5.   (Previously presented) A router controlling congestion on links attached to the router, said router comprising:

3   a plurality of ports;

4   a first port of said plurality of ports for receiving a data packet;

5   a second port of said plurality of ports for transmitting said data packet;

6   a receiver to receive an incoming loss report message on said second port;

7   a first processor to determine loss of packets on selected ports of said plurality of

8   ports;

9   a second processor to calculate, in response to said incoming loss report message

10   and said loss of packets, a loss rate statistic; and

11   a transmitter to transmit an outgoing loss report message through said first port,

12   said outgoing loss report message containing a field having said loss rate statistic written

13   therein,

14   wherein said loss rate statistic is a time averaged loss rate.

1   6.   (Previously presented) The router of claim 1, further comprising:

2   a linecard supporting at least one of said plurality of ports, said linecard having

3   said first processor and a memory mounted thereon, said first processor computing said

4   loss of packets.

1   7.   (Previously presented) The router of claim 1, further comprising: said outgoing

2   loss report message is carried in a NAK packet.

1   8.   (Previously presented) The router of claim 1, further comprising: said outgoing

2   loss report message is transmitted by said router in response to the router receiving a loss

3   report message from a downstream router.

1   9.   (Previously presented) The router of claim 1, further comprising: said outgoing

2   loss report message is transmitted by said router in response to the router receiving a loss

3   report message from a downstream receiver station.

1   10.   (Previously presented) The router of claim 1, further comprising: said outgoing

2   loss report message is periodically transmitted by said router.

1   11.   (Previously presented) The router of claim 1, further comprising:

2   a central processor (CPU) forwarding engine, said CPU forwarding engine determining

3   which port said outgoing loss report message is to be transmitted.

1   12.   (Previously presented) The router as in claim 1, further comprising:

2   a central processor (CPU) control engine, said CPU control engine generating said outgo-

3   ing loss report message.

1   13.   (Previously presented) A method for operating a router, said method comprising:

2   receiving a multicast group data packet at a first port;

3   transmitting a replica of said multicast group data packet from a second port;

4   receiving an incoming loss report message on said second port;

5   computing a loss of packets on selected ports of said router;

6   calculating, in response to said incoming loss report message and said loss of

7   packets, a loss rate statistic; and

8   transmitting an outgoing loss report message through said first port, said outgoing

9   loss report message containing said loss rate statistic in a field of said outgoing loss re-

10   port message.

1 14. (Previously presented) The method of claim 13, further comprising:

2 choosing said loss rate statistic as a largest packet loss rate in a set of loss rates computed

3 for said selected ports of said router.

1 15. (Previously presented) A method for operating a router, said method compris-

2 ing:

3   receiving a multicast group data packet at a first port;

4   transmitting a replica of said multicast group data packet from a second port;

5   receiving an incoming loss report message on said second port;

6   computing a loss of packets on selected ports of said router;

7   calculating, in response to said incoming loss report message and said loss of

8 packets, a loss rate statistic;

9   transmitting an outgoing loss report message through said first port, said outgoing

10 loss report message containing said loss rate statistic in a field of said outgoing loss re-

11 port message; and

12   choosing said loss rate statistic as a time averaged packet loss rate as determined

13 by said router.

1 16. (Original) The method of claim 13, further comprising:

2 selecting said selected ports as members of a multicast group distribution tree.

1 17. (Previously presented) The method of claim 13, further comprising:

2   determining a loss rate statistic which has not expired for at least one port of said

3 router, where said at least one port includes all ports of a multicast group distribution tree

4 of said multicast group; and

5   writing said loss rate statistic into said outgoing loss report message before trans-

6 mitting said outgoing loss report message.

1   18.   (Previously presented) The method of claim 13, further comprising: transmitting

2   said outgoing loss report message as a NAK packet.

1   19.   (Previously presented) The method of claim 13, further comprising: transmitting

2   said outgoing loss report message in response to receiving said incoming loss report mes-

3   sage.

1   20.   (Previously presented) The method of claim 13, further comprising: transmitting

2   said outgoing loss report message periodically.

1   21.   (Previously presented) The method of claim 13, further comprising: transmitting

2   said outgoing loss report message as a unicast message to a next upstream router capable

3   of responding to said outgoing loss report message.

1   22.   (Original) The method of claim 13 further comprising: transmitting said outgo-

2   ing loss report message as a multicast message.

1   23.   (Previously presented) A router, comprising:

2   means for receiving a multicast group data packet at a first port;

3   means for transmitting a replica of said multicast group data packet from a second

4   port;

5   means for receiving an incoming loss report message on said second port;

6   means for computing a loss of packets on selected ports of said router;

7   means for calculating, in response to said incoming loss report message and said

8   loss of packets, a loss rate statistic; and

9   means for transmitting an outgoing loss report message through said first port,

10   said outgoing loss report message containing said loss rate statistic in a field of said out-

11   going loss report message.

1   24.   (Original) A computer readable media having instructions written thereon for

2   practicing the method of claim 13.

1   25.   (Previously presented) Electromagnetic signals carried on a computer network,

2   said electromagnetic signals carrying instructions for practicing the method of claim 13.

1   26.   (Previously presented) The router as in claim 1, wherein said outgoing loss report

2   message is received at a source station of a multicast distribution tree, said source station

3   controlling a transmission rate of data packets transmitted in said multicast distribution

4   tree based on the value of said loss rate statistic stored in said outgoing loss report mes-

5   sage.

1   27.   (Previously presented) The method as in claim 13, further comprising:

2   receiving said outgoing loss report message at a source station of a multicast dis-

3   tribution tree; and

4   controlling, in response to receiving said outgoing loss report message, a trans-

5   mission rate of data packets transmitted by said source station in said multicast distribu-

6   tion tree based on the value of said loss rate statistic stored in said outgoing loss report

7   message.

1   28.   (Previously presented) The router as in claim 1, wherein said outgoing loss report

2   message is not transmitted by said transmitter if an absolute value of a fractional change

3　of said loss rate statistic, as compared with a previous loss rate statistic, is less than or

4　equal to a predetermined limit value.

1　29.　　(Previously presented) The method as in claim 13, further comprising:

2　　　calculating an absolute value of a fractional change of said loss rate statistic as

3　compared with a previous loss rate statistic; and

4　　　preventing, in response to said calculated absolute value being less than or equal

5　to a predetermined limit value, transmission of said outgoing loss report message.

1　30.　　(Previously presented) The router as in claim 1, wherein said outgoing loss report

2　message stores a lifetime associated with said loss rate statistic, said lifetime indicating a

3　duration of time for which said loss rate statistic is valid.

1　31.　　(Previously presented) The method of claim 13, further comprising:

2　　　associating with said loss rate statistic a lifetime for aging said loss rate statistic;

3　　　determining whether said loss rate statistic is valid based on the value of said life-

4　time associated with said loss rate statistic; and

5　　　writing, in response to determining that said loss rate statistic is valid, said loss

6　rate statistic into said outgoing loss report message before transmitting said outgoing loss

7　report message.

1　32.　　(Previously presented) A router controlling congestion on links attached to the

2　router, said router comprising:

3　　　a plurality of ports;

4　　　a first port of said plurality of ports for receiving a data packet;

5　　　a second port of said plurality of ports for transmitting said data packet;

6   a receiver configured to receive an incoming loss report message on said second

7   port;

8   a processor configured to determine loss of packets on selected ports of said plu-

9   rality of ports, said processor being further configured to calculate, in response to said

10   incoming loss report message and said loss of packets, a loss rate statistic; and

11   a transmitter configured to transmit an outgoing loss report message through said

12   first port, said outgoing loss report message containing a field having said loss rate statis-

13   tic written therein.

1   33.   (Previously presented) A router controlling congestion on links attached to the

2   router, said router comprising:

3   a plurality of ports;

4   a first port of said plurality of ports for receiving a data packet;

5   a second port of said plurality of ports for transmitting said data packet in a down-

6   stream direction;

7   a processor configured to determine loss of packets on a port of said plurality of

8   ports and, in response to said loss of packets, to calculate a loss rate statistic; and

9   a transmitter configured to transmit an outgoing loss report message through said

10   first port in an upstream direction, said outgoing loss report message containing a field

11   having said loss rate statistic written therein.

1   34.   (Previously presented) The router as in claim 33, further comprising:

2   a receiver to receive a loss report message on said second port, said loss report

3   traveling in said upstream direction; and

4   said processor to calculate said loss rate statistic in response to said loss of pack-

5   ets and in response to said loss report.

1   35.   (Previously presented) The router as in claim 33, further comprising:

2   said loss rate statistic is a largest loss rate in a set of loss rates determined for said

3 selected ports of said plurality of ports.

1   36.   (Previously presented) The router as in claim 33, further comprising:

2   said loss rate statistic is a time averaged loss rate.

1   37.   (Previously presented) The router of claim 33, further comprising:

2   a linecard supporting at least one of said plurality of ports, said linecard having a

3 linecard processor and a memory mounted thereon, said linecard processor computing

4 said loss of packets.

1   38.   (Previously presented) The router of claim 33, further comprising:

2   a central processor (CPU) forwarding engine, said CPU forwarding engine deter-

3 mining which port said outgoing loss report message is to be transmitted.

1   39.   (Previously presented) The router as in claim 33, further comprising:

2   a central processor (CPU) control engine, said CPU control engine generating said

3 outgoing loss report message.

1   40.   (Previously presented) The router of claim 33, further comprising:

2   said outgoing loss report message is carried in a NAK packet.

41.   (Previously presented) The router of claim 33, further comprising:

1   said outgoing loss report message is transmitted by said router in response to the

2   router receiving a loss report message from a downstream router.

1   42.   (Previously presented) The router of claim 33, further comprising:

2   said outgoing loss report message is periodically transmitted by said router.

1   43.   (Previously presented) The router as in claim 33, further comprising:

2   said outgoing loss report message is received at a source station of a multicast

3   distribution tree, said source station controlling a transmission rate of data packets trans-

4   mitted in said multicast distribution tree based on the value of said loss rate statistic

5   stored in said outgoing loss report message.

1   44.   (Previously presented) The router as in claim 33, further comprising:

2   means for receiving said outgoing loss report message at a source station of a

3   multicast distribution tree; and

4   means for controlling, in response to receiving said outgoing loss report message,

5   a transmission rate of data packets transmitted by said source station in said multicast dis-

6   tribution tree based on the value of said loss rate statistic stored in said outgoing loss re-

7   port message.

1   45.   (Previously presented) The router as in claim 33, further comprising:

2   said outgoing loss report message is not transmitted by said transmitter if an abso-

3   lute value of a fractional change of said loss rate statistic, as compared with a previous

4   loss rate statistic, is less than or equal to a predetermined limit value.

1   46.   (Previously presented) The router as in claim 33, further comprising:

2   said outgoing loss report message stores a lifetime associated with said loss rate

3 statistic, said lifetime indicating a duration of time for which said loss rate statistic is

4 valid.

1   47.   (Previously presented) A method for operating a router, comprising:

2   receiving a data packet traveling in a downstream direction at a first port;

3   transmitting a replica of said data packet from a second port in said downstream

4 direction;

5   computing a loss of packets on selected ports of said router;

6   calculating, in response to said loss of packets, a loss rate statistic; and

7   transmitting an outgoing loss report message through said first port in an upstream

8 direction, said outgoing loss report message containing said loss rate statistic in a field of

9 said outgoing loss report message.

1   48.   (Previously presented) The router as in claim 47, further comprising:

2   receiving a loss report message on said second port, said loss report traveling in

3 said upstream direction; and

4   calculating said loss rate statistic in response to said loss of packets and in re-

5 sponse to said loss report.

1   49.   (Previously presented) The method of claim 47, further comprising:

2   calculating said loss rate statistic as a largest loss rate in a set of loss rates deter-

3 mined for said selected ports of said plurality of ports.

1 50. (Previously presented) The method of claim 47, further comprising:

2   calculating said loss rate statistic as a time averaged loss rate.

1 51. (Previously presented) The method of claim 47, further comprising:

2   computing said loss of packets by a processor mounted on a linecard, said line-

3 card supporting at least one of said plurality of ports, said linecard having said linecard

4 processor and a memory mounted thereon.

1 52. (Previously presented) The method of claim 47, further comprising:

2   determining which port said outgoing loss report message is to be transmitted by a

3 central processor (CPU) forwarding engine.

1 53. (Previously presented) The method as in claim 47, further comprising:

2   generating said outgoing loss report message by a central processor (CPU) control

3 engine.

1 54. (Previously presented) The method of claim 47, further comprising:

2   carrying said outgoing loss report message in a NAK packet.

1 55. (Previously presented) The method of claim 47, further comprising:

2   transmitting said outgoing loss report message by said router in response to the

3 router receiving a loss report message from a downstream router.

1 56. (Previously presented) The method of claim 47, further comprising:

2   transmitting said outgoing loss report message periodically by said router.

1   57.   (Previously presented) The method as in claim 47, further comprising:

2   transmitting said outgoing loss report message upstream so that it can be received

3   at a source station of a multicast distribution tree, said source station controlling a trans-

4   mission rate of data packets transmitted in said multicast distribution tree based on the

5   value of said loss rate statistic stored in said outgoing loss report message.

1   58.   (Previously presented) The method as in claim 47, further comprising:

2   receiving said outgoing loss report message at a source station of a multicast dis-

3   tribution tree; and

4   controlling, in response to receiving said outgoing loss report message, a trans-

5   mission rate of data packets transmitted by said source station in said multicast distribu-

6   tion tree based on the value of said loss rate statistic stored in said outgoing loss report

7   message.

1   59.   (Previously presented) The method as in claim 47, further comprising:

2   calculating an absolute value of a fractional change of said loss rate statistic as

3   compared with a previous loss rate statistic; and

4   preventing, in response to said calculated absolute value being less than or equal

5   to a predetermined limit value, transmission of said outgoing loss report message.

1   60.   (Previously presented) The method of claim 47, further comprising:

2   associating with said loss rate statistic a lifetime for aging said loss rate statistic;

3   determining whether said loss rate statistic is valid based on the value of said life-

4   time associated with said loss rate statistic; and

5   writing, in response to determining that said loss rate statistic is valid, said loss

6   rate statistic into said outgoing loss report message before transmitting said outgoing loss

7   report message.

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1   61.   (Previously presented) A router, comprising:

2   means for receiving a data packet traveling in a downstream direction at a first

3   port;

4   means for transmitting a replica of said data packet from a second port in said

5   downstream direction;

6   means for computing a loss of packets on selected ports of said router;

7   means for calculating, in response to said loss of packets, a loss rate statistic; and

8   means for transmitting an outgoing loss report message through said first port in

9   an upstream direction, said outgoing loss report message containing said loss rate statistic

10   in a field of said outgoing loss report message.

1   62.   (Previously presented) The router as in claim 61, further comprising:

2   means for receiving a loss report message on said second port, said loss report

3   traveling in said upstream direction; and

4   means for calculating said loss rate statistic in response to said loss of packets and

5   in response to said loss report.

1   63.   (Previously presented) The router of claim 61, further comprising:

2   means for calculating said loss rate statistic as a largest loss rate in a set of loss

3   rates determined for said selected ports of said plurality of ports.

1   64.   (Previously presented) The router of claim 61, further comprising:

2   means for calculating said loss rate statistic as a time averaged loss rate.

1   65.   (Previously presented) The router of claim 61, further comprising:

2   means for computing said loss of packets by a processor mounted on a linecard,

3   said linecard supporting at least one of said plurality of ports, said linecard having said

4   linecard processor and a memory mounted thereon.

1   66.   (Previously presented) The router of claim 61, further comprising:

2   means for determining which port said outgoing loss report message is to be

3   transmitted by a central processor (CPU) forwarding engine.

1   67.   (Previously presented) The router as in claim 61, further comprising:

2   means for generating said outgoing loss report message by a central processor

3   (CPU) control engine.

1   68.   (Previously presented) The router of claim 61, further comprising:

2   means for carrying said outgoing loss report message in a NAK packet.

1   69.   (Previously presented) The router of claim 61, further comprising:

2   means for transmitting said outgoing loss report message by said router in re-

3   sponse to the router receiving a loss report message from a downstream router.

1   70.   (Previously presented) The router of claim 61, further comprising:

2   means for transmitting said outgoing loss report message periodically by said

3   router.

1   71.   (Previously presented) The router as in claim 61, further comprising:

2   means for transmitting said outgoing loss report message upstream so that it can

3   be received at a source station of a multicast distribution tree, said source station control-

4   ling a transmission rate of data packets transmitted in said multicast distribution tree

5   based on the value of said loss rate statistic stored in said outgoing loss report message.

1   72.   (Previously presented) The router as in claim 61, further comprising:

2   means for receiving said outgoing loss report message at a source station of a

3   multicast distribution tree; and

4   means for controlling, in response to receiving said outgoing loss report message,

5   a transmission rate of data packets transmitted by said source station in said multicast dis-

6   tribution tree based on the value of said loss rate statistic stored in said outgoing loss re-

7   port message.

1   73.   (Previously presented) The router as in claim 61, further comprising:

2   means for calculating an absolute value of a fractional change of said loss rate sta-

3   tistic as compared with a previous loss rate statistic; and

4   means for preventing, in response to said calculated absolute value being less than

5   or equal to a predetermined limit value, transmission of said outgoing loss report mes-

6   sage.

1   74.   (Previously presented) The router of claim 61, further comprising:

2   means for associating with said loss rate statistic a lifetime for aging said loss rate

3   statistic;

4   means for determining whether said loss rate statistic is valid based on the value

5   of said lifetime associated with said loss rate statistic; and

6   means for writing, in response to determining that said loss rate statistic is valid,

7   said loss rate statistic into said outgoing loss report message before transmitting said out-

8   going loss report message.

1   75.   (Previously presented) A computer readable media, comprising:

2   said computer readable media having instructions written thereon for execution on

3   a processor for the practice of a method of operating a router, the method having the steps

4   of,

5   receiving a multicast group data packet at a first port;

6   transmitting a replica of said multicast group data packet from a second port;

7   receiving an incoming loss report message on said second port;

8   computing a loss of packets on selected ports of said router;

9   calculating, in response to said incoming loss report message and said loss of

10   packets, a loss rate statistic; and

11   transmitting an outgoing loss report message through said first port, said outgoing

12   loss report message containing said loss rate statistic in a field of said outgoing loss re-

13   port message.

1   76.   (Previously presented) Electromagnetic signals propagating on a computer net-

2   work, comprising:

3   said electromagnetic signals carrying instructions for execution on a processor for

4   the practice of a method of operating a router, the method having the steps of,

5   receiving a multicast group data packet at a first port;

6   transmitting a replica of said multicast group data packet from a second port;

7   receiving an incoming loss report message on said second port;

8   computing a loss of packets on selected ports of said router;

9   calculating, in response to said incoming loss report message and said loss of

10   packets, a loss rate statistic; and

11   transmitting an outgoing loss report message through said first port, said outgoing

12   loss report message containing said loss rate statistic in a field of said outgoing loss re-

13   port message.

1   77.   (Previously presented) A computer readable media, comprising:

2   said computer readable media having instructions written thereon for execution on

3   a processor for the practice of a method of operating a router, the method having the steps

4   of,

5   receiving a data packet traveling in a downstream direction at a first port;

6   transmitting a replica of said data packet from a second port in said downstream

7   direction;

8   computing a loss of packets on selected ports of said router;

9   calculating, in response to said loss of packets, a loss rate statistic; and

10   transmitting an outgoing loss report message through said first port in an upstream

11   direction, said outgoing loss report message containing said loss rate statistic in a field of

12   said outgoing loss report message.

1   78.   (Previously presented) Electromagnetic signals propagating on a computer net-

2   work, comprising:

3   said electromagnetic signals carrying instructions for execution on a processor for

4   the practice of a method of operating a router, the method having the steps of,

5   receiving a data packet traveling in a downstream direction at a first port;

6   transmitting a replica of said data packet from a second port in said downstream

7   direction;

8   computing a loss of packets on selected ports of said router;

9   calculating, in response to said loss of packets, a loss rate statistic; and

10   transmitting an outgoing loss report message through said first port in an upstream

11 direction, said outgoing loss report message containing said loss rate statistic in a field of

12 said outgoing loss report message.